

EUROPEAN PATENT OFFICE

Pat nt Abstracts of Japan

PUBLICATION NUMBER : 62118567
PUBLICATION DATE : 29-05-87

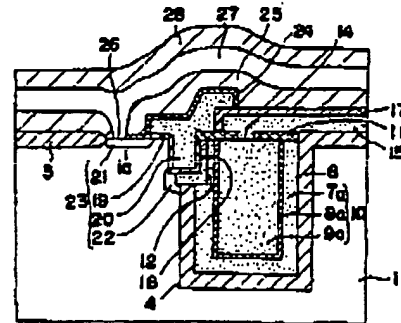
APPLICATION DATE : 19-11-85
APPLICATION NUMBER : 60257655

APPLICANT : OKI ELECTRIC IND CO LTD;

INVENTOR : INO MASAYOSHI;

INT.CL. : H01L 27/10 G11C 11/34

TITLE : SEMICONDUCTOR DEVICE AND
MANUFACTURE THEREOF



ABSTRACT : PURPOSE: To obtain a semiconductor device provided with a high density dynamic semiconductor memory cell, which implements high capacity with a small occupying area, by embedding a cell capacitor in a trench, which is provided in the vicinity of an active region, through an insulating isolation film, forming a large part of a transfer Tr at the side wall part of the cell capacitor, and the like.

CONSTITUTION: A cell capacitor 10 is embedded in a first trench 4, which is provided in a silicon substrate 1, through an insulating isolation film 6 in the vicinity of an active region 1a. A second trench 12 is formed so that it is placed at least in the silicon substrate 1 along a region from the edge part of the active region 1a to the side wall part of the cell capacitor 10, which is adjacent to said edge part. Conductive polysilicon is buried in the trench 12 and a contact part is formed. In a third trench 18, which is formed at the side wall part of the cell capacitor 10, the most parts of a gate electrode 20 of a transfer gate transistor 23 and a gate insulating film 19 are formed. Thus, the memory cell can be formed in a small occupying area. The surface of the laminated films of an intermediate insulating film 25, a metal wiring layer 27, a passivation film 28 and the like is flattened. Therefore, breakdown at a step part can be suppressed.

COPYRIGHT: (C)1987,JPO&Japio